How Do Green Plants Produce O2 from Water?

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BIO-PHYS

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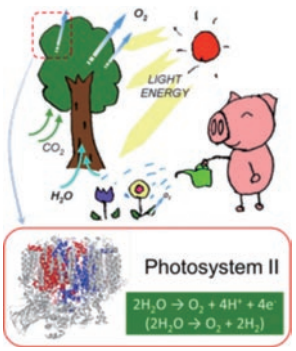
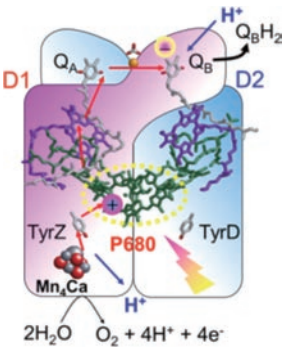
Exploring protein functions based on protein molecular structures.

Chemical compound structures help determine the characteristics of compounds. Similarly, the shape of a protein molecule, namely the protein crystal structure, can determine the function of the protein molecule in a biological system. By using protein crystal structures and theoretical approaches such as quantum chemistry, Dr. Ishikita and his colleagues clarified protein functions that were thus far unknown. Their particular focus is in understanding the reaction mechanism behind the water-splitting/O_2-evolving process in Photosystem II, the membrane protein-pigment complex involved in photosynthesis in green plants. It is anticipated that in the future, this work will contribute to the design of a catalyst for artificial photosynthesis, whereby H_2 is produced solely from water by sunlight irradiation.





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